

*Additional Notes upon the Collection of Coins and Medals now upon Exhibition at the Pennsylvania Museum and School of Industrial Art, Memorial Hall, Fairmount Park, Philadelphia. By Henry Phillips, Jr., A.M.*

(Read before the American Philosophical Society, October 3d, 1879.)

Since the notes I had the honor of presenting to our Society last February there have been so many additions to this collection that a further description may be of interest.

Recurring to the arrangement originally projected, the first head to which I would call the attention of the Society is that of Medals.

The medal issued to commemorate the 21st anniversary of the foundation of the Numismatic and Antiquarian Society of Philadelphia (January 1, 1879), and the twelfth presidential term of the Hon. Eli K. Price, has been placed in the medal case, and likewise the full materials for exhibiting its process of manufacture. First there is the large plaster cast taken from the wax me llallion originally modeled from life; this latter being perishable has not been preserved, but the plaster representation exhibits a perfect *fac simile* of the original. Secondly, is the same portrait in plaster reduced by mechanical means to the size it is to occupy on the die. Third is the *hub* upon which the portrait is cut in alto relievo by a machine which reproduces in any desired size the figure which it is to bear, and which is afterwards tempered to hard steel. Fourth, the die which is struck from the hub and shows in intaglio the portrait intended to be impressed upon the medal. It is at first soft, so as to easily receive the impression, and it is then afterwards hardened so as to bear the necessary amount of pressure and blows. There are also leaden trial impressions of the dies. These show the whole process of making the dies.

The medal bears upon its obverse the portrait of the venerable gentleman in whose honor it was struck, surrounded by the inscription, ELI K. PRICE, PRESIDENT, 1879. On the reverse the seal of the Society and the inscription, THE NUMISMATIC AND ANTIQUARIAN SOCIETY OF PHILADELPHIA, founded January 1, 1858. The meaning of the devices on the seal are as follows:

The owl, which is the crest, symbolizes wisdom and learning; it is taken from the device upon the coins of Athens, issued in the fifth century before the present era, and is a faithful copy of that archaic work of art.

The shield, upon which the quarterings are displayed, is the *Saxon* shield, emblematic of English ancestry and associations; the emblems on each of the four portions of the shield represent, respectively, Europe, Asia, Africa, and America.

Europe presents the cross as found upon the coinage of the first Christian kings of England; Africa, the Egyptian sphynx; Asia, a Chinese coin, and America, the stone arrow-heads, axes and implements of the Aborigines. The motto *vestigia rerum sequi* refers to the nature of the Society's occupations.

There is also a medal (in bronze) of the late Joseph J. Mickley, the first President of the Numismatic and Antiquarian Society of Philadelphia.

This medal was cut by Mrs. Lea Ahlborn, of Stockholm, medalist and designer of the Royal Swedish Mint. The execution of the flesh is remarkably well done, and the whole medal is a credit to the skill of the female artist.

There are also medals of Lavater, Cervantes, Shakspeare, of the *Series Numismatica*, and of Alexander the First of Russia, and Louis XVI. of France, deposited by H. Dumont Wagner, Esq., of this city.

A bronze medal commemorating the Massacre of St. Bartholomew bears on the obverse the head of Pope Gregory XIII.; on the reverse an angel armed with sword and cross destroying and putting to flight a multitude, with the inscription HUGENOTORUM STRAGES.

It may be observed in regard to this medal that doubts have been cast as to whether it was actually issued by the Papal authorities, but rather that it was done by those inimical to the Church of Rome, in order to cast discredit upon it by appearing to exult over such a scene of carnage. The present medal, however, is of most undoubted genuineness, having been purchased in Rome with the whole series of the Pontifical Medals direct from the Director of the Papal Mint. The author of "*La Science des Medailles*" (Paris, 1715), says, *il ne faut pas confondre avec les véritables medailles des Papes, certaines que les ennemis du Saint S'ège ont fabriquées pour les insulter, ou pour les rendre odieuses. Telle est celle du Jules III. avec cette inscription qui lui sert de revers, GENS ET REGNUM QUOD NON SERVIERIT TIBI PERIBIT. Telle est la Medaille de Paul III,*

ΦΕΡΝΗ ΖΗΝΟΣ ΕΥΠΑΙΝΕΙ,

*que l'on ne doit jamais placer parmi les medailles véritables.* (No. 52 in the Hockley collection.)

Pinkerton, however, is of the opinion that this latter described medal is genuine and was cut by Michael Angelo. It is certainly a handsome piece of workmanship and would do no discredit even to that great artist if the attribution be correct.

All the medals before Paul the Second, according to the same author, were issued during the Pontificate of Alexander the Seventh. It is stated that the Abbé Bizot had the design of issuing a full line of all the Popes, which he was prevented from accomplishing by the death of the reigning pontiff under whose auspices the undertaking had been begun.

Pinkerton states that the medal of Julius the Second, "*contra stimulum ne calcitras,*" is the first medal which was struck instead of being cast. He attributes to Cellini the medal of Clement the Seventh, "*ut bibat populus;*" that of Gregory XIII. upon the reformation of the Calendar to Parmegiano and to Bassiano and Cavino (the celebrated Paduan forgers) the dies of the medals of Julius the Third.

Mrs. Henry Bohlen of this city has deposited a number of interesting gold and silver coins and medals, among which latter are the following :

A very large silver medal (size 42 of the scale of the Numismatic and Antiquarian Society of Philadelphia), bearing on the obverse a view of the city of Amsterdam ; in the foreground the river Ams'el filled with vessels

containing armed men. Above the city and below a shield charged with its coat of arms a hand appears holding a heart, projecting from a cloud and surrounded by luminous rays. The inscription consists of these Hollandish verses :

ONS HERT EN HANDT  
IS VOOR HET LANDT.

On the reverse a garland of olives encloses the words GODT HEEFT ONS BEWAERT.

Around the wreath is the inscription, ZYN HOOGHEYT WILLEM PRINS VAN ORANGE HEEFT DE STADT AMSTERDAM BELEEGERT DEN 30 JULY ENDE WEDEROM AFGETROCKEN DEN 4 AUGUSTY, 1650.

This medal appears to have been chased entirely by hand, and not to have been struck from a die. Dissensions arose among the States comprising the Dutch Federation during the early summer of 1650, and the Prince of Orange after endeavoring to procure a peaceable settlement of the existing difficulties resolved to obtain justice by force of arms. To this end he sent a secret order to the troops in garrison at Nimeguen, Arnheim and elsewhere to march against Amsterdam, rendezvousing there on the 30th day of June, at an early hour of the morning to force the sturdy burghers into submission. The Prince joined the army, after arresting treacherously six of the prominent men of Horn, Delft, Dort and Harlem, and proceeded in his enterprise, which, however, failed of success, the citizens of Amsterdam having received timely warning. They had placed themselves in a condition of defense, and were prepared to open the sluices and dykes in order if necessary to flood the country, and render it uninhabitable for an army.

The Prince seeing that he could not capture the city had recourse to negotiations, the result of which was that after an agreement had with the Burghers he withdrew his troops from before the city on the 4th of August, 1650.

The present medal is one of a series struck to commemorate this occurrence. (Van Loon Vol. II. p. 329 et seq.)

A beautiful silver medal bearing on the obverse a Janus bust on a pedestal, female head facing left, male head facing right. Above is the inscription,

VERGANGENHEIT, GEGENWART, ZUKUNFT,

AUS ALLEN SCHOEFFE DIR FREUDEN.

Reverse. Upon a band in centre extending from side to side of the medal is the sign of Aquarius, between Capricornus and Pisces. Above is the sun in full glory, sending down beams which fill the whole field and penetrate a cloud which is below the band referred to.

A grand silver medal commemorates the repulse of the Turks before the City of Zenta on the Theiss.

Obverse. A river god standing holding on his left hand a victory which

is offering him a crown. In his right an urn from which a river is flowing. Under his left arm is a tablet with the inscription,

AUSPICHS  
LEOPOLDI MAGNI  
VIRTUTE EUGENII  
SABAUDIÆ D.  
EXERCIT. TURCIC.  
CLADE XX. Host.  
FACTA  
PRIMARIIS DUCIB.  
DELETIS  
CASTRIS UNIVERS.  
TORMENT. XCIII.  
OMNIQUE APPARATU  
BELLICO  
INTERCEPTIS.  
CÆSUS PROFLIGAT  
D. <sup>1</sup><sub>II</sub> SEPT  
A<sup>o</sup> MDCXCVII

Reverse. A besieged city, in the background a river and bridge and mountains: over the town the word ZENTA. In the foreground, cannon, horsemen, infantry, camp, &c. Above is the inscription, INTERFECIT EXERCITUM EORUM ET SUBVERTIT ROTAS CURRUM FEREBANTURQUE IN PROFUNDUM EXOD. 14.

On the edge in raised letters is the Chronogram, *En novvs ex voto felix Leopoldæ triumphvs.*, making the date 1697.

A silver medal shows on obverse a winged female figure standing by a monument overhung with floral wreaths and on whose summit is a casket of flowers, and around whose base plants and flowers are growing. Inscription, DEIN SCHUTZ GEIST KRÄNZE DEINE TAGE.

Reverse. A branch with flowers horizontally across the field and dividing the inscription, MIT FREUNDSCHAFT LIEB UND FREUDE STETS

—(branch)—

WUNSCH AUS REINEM HERZEN GLÜCK.

There is a noble medal in gold with a clasp, evidently to be worn as a decoration, of Frederick III of Denmark and Sofia Amalia, his Queen, in commemoration of the courageous defence of Copenhagen against the Swedes under Charles Gustavus in 1658.

Obverse. A finely executed male laureated bust in high relief. Inscription, DOMINUS PROVIDEBIT.

Reverse. A laureated female bust with the inscription, SPES MEA IN DEO.

The peace of Rodschild (Feb., 1658) had scarcely been concluded, when Charles Gustavus, of Sweden, formed the design of conquering the whole

kingdom of Denmark, and, under the pretext that the stipulations of the treaty were not being carried out, in the month of August he unexpectedly blockaded the roadstead of Copenhagen. All was consternation, and the courtiers begged the King, Frederic the Third, to take to flight for safety into Norway. But his noble spirit revolted, and with Roman bravery he resolved to defend his capital to the last gasp, gave his personal superintendence to all the necessary preparations for its defence, planted the Royal Standard on the ramparts, armed the citizens, assigned to his officers the command of different portions of the city, and, animated by the hopes and promises of succor held out to him by the Netherlandish provinces, whose interests were in common with those of his kingdom, he resolved to perish beneath the ruins of Copenhagen, with his whole family and court, rather than fly or fall into the hands of his enemies. Nor were his hopes unfounded. When the States of Holland knew the design of the King of Sweden to be the conquest of Denmark so as to fall upon the Elector of Brandenburg and be avenged upon him for his having deserted the Swedish cause, and saw that his efforts were to obtain the complete control of the Baltic Sea, to the exclusion of their commerce, they resolved to send a fleet and an army to the relief of the threatened nation, although by some it was argued that to do so might imperil their relations with France and England, which were supposed to be favorable to the Swedish pretensions. On the 17th of October, Admiral Otdam set sail to succor the King of Denmark, who was continuing to defend his capital, with valor and fortitude, although the enemy had become masters of the Castles of Cronenbourg and Helsinbourg, and held the mouth of the Sund blockaded by their vessels, so that the Hollandish fleet in order to bring relief to the besieged would be obliged to run the gauntlet of the fires of these two fortresses, and at the same time manœuvre their ships in a narrow passage to avoid the dangers of an intricate navigation. On the 8th of November the Admiral divided his fleet into three squadrons and proceeded to engage the enemy's vessels, manned chiefly by Scotch and Irish sailors, and commanded by the illustrious Wrangel, as Captain General of the Kingdom of Sweden. About 9 o'clock in the forenoon the combat began, and raged for six hours with great fury in the presence of the King of Sweden himself, who in company with his wife and sister and other personages of high rank watched from the Castle of Cronenbourg the fortunes of the fight. The Swedes fought bravely as ever, but the extraordinary valor of the Hollanders was ultimately crowned with success. Of the enemy's vessels they captured three, and burned and sunk eight others, forcing the rest to take to flight, thus permitting a juncture to be made with the Danish flotilla under Admiral Bielke. The Sound was opened by valor and force of arms, and the Swedes chased out of that sea by a most glorious victory, whose memory was preserved in this and some other medals.

A silver medal presents on the obverse Neptune boldly engraved standing in a chariot drawn by two horses upon a stormy ocean whose waves are lashed into fury by Æolus in the right corner. In Neptune's left hand is

his trident upright, his right is extended open pointing right. Upon the seat of the car is a crown. Inscription, MOTOS. PRESTAT. COMPOSERE. FLUCTUS.

Reverse. Upon a calm and stilly sea is floating a nest in which are two halcyons. On the right the setting sun is illumining by his rays the whole field of the medal. Above on a band is the inscription, HALCIONIBUS. REDUCTIS. SENATUS. AMSTELOD. CIVIBUS. SUIS. HOC ANTIQUE. VIRTUTIS SPECTATÆQ. FIDEI PREMII. LARGITUR.

In the exergue, MDCXCVI. (Vide Van Loon, Vol. 4, p. 221.)

It would be hardly credible what a tumult could always be started in the Netherlands from the most trivial causes were not history so very explicit. The present medal was struck to commemorate a sedition which grew out of an ordinance regulating the number and the salaries of the criers at the public funerals. Those who were excluded from this employment felt at one blow their whole subsistence taken away from them; were full of discontent and clamored loudly against the magistracy, alleging that their offices had been wrested from them in order that the underlings and parasites of their rulers might be provided for comfortably. To further augment the popular feeling it was given out that the bodies of the poor were mutilated by branding previous to interment. The people became inflamed and maltreated the new criers wherever they met them, till at last, emboldened by the usual applause and serenity of the bystanders, on the night of the 30th of January, the day preceding that on which the new regulation was to go into operation, they assembled in great numbers on the *Dam*, a public place in front of the Hotel de Ville. The troops were called out but their presence only served to increase the tumult while the populace, armed with stout cudgels, formed themselves regularly into companies, rallying under aprons of blue cloth and beating for drums upon empty beer barrels.

The mob continued to grow and traversed the streets like madmen, followed by a troop of children. Arrived at the *Aelmoesseniers Huis* they put to flight the soldiers placed there as a guard to the syndics of the criers of funerals, and fired by their exploit, in thus having overturned constituted authority, they turned to pillage the houses of obnoxious officials. The Burgers were called to arms, now realizing that the rioters intended to sack the city if possible, using their grievance merely as a stalking horse. Night fell upon the scene, but in the early morning before the citizens had assembled to take arms, the rabble came together again and after pillaging with renewed fury laid siege to the house of Burgomaster De Vries. The Magistracy now issued an order declaring that force must be resisted by force; the citizens assembled and marched towards the field of battle, fired upon the riotous assembly, killed two and put the others to flight. Whilst this was taking place a portion of the mob engaged in sacking the house of a rich Jew named Pinto (and could there ever be popular uprising in Europe without a Jew's house being pillaged?) was fallen upon by another detachment of the citizens who drove them away at the point of the sword. The bridges



were all raised, and the gatherings in other quarters dispersed by a summary administration of justice.

Two of the robbers taken in the field were hung to the neighboring lamp-post, and a strong force was posted on the Dam and other exposed parts of the city. At the first news of the insurrection the regiment of Guards, which was stationed at 'S Gravemoer, had taken up its march toward the city to assist, if needed, in quelling the disturbance, but when distant only two leagues from Amsterdam, the Council did not judge it expedient to receive the troops, but thanking them heartily for their zeal, begged them to hold their present position unless it should so happen that the riot could not be put down by the fidelity and the valor of the citizens. Volunteers under the command of Messrs. Hinlopen, Six, Burg and Huydekooper, patrolled the streets to preserve order until the fourth of February. On the 6th, six of the rioters were executed, and the corpses of four others, who had been killed in the tumult, were hung up by the feet on the same gallows. Several of the survivors were shut up in the House of Correction.

The Magistracy sensible of the zeal and courage of the train bands and of the volunteers, and desiring to exhibit in an honorable way the gratitude of the citizens, caused the present medal to be engraved in three different sizes, which, on the 28th of November of the same year, were distributed publicly to all the troops, each man receiving a different size according to his rank.

A silver medal bears upon the obverse a widow seated between two children in a cemetery, pointing to the all-seeing eye in the heavens in a triangle surrounded by rays from which an angel is descending and emptying upon their heads the contents of a cornucopia. On the left is an obelisk (upon which is engraved the letter C), surrounded by English yew-trees. Above, on a ribband, is the inscription, *HY IS DER WEEZEN VADER*. In the exergue, *TER GEDACHTENIS AAN DE weezen uit gedeeld*.

The reverse exhibits three sides of a building enclosing a court-yard; above is the inscription, *LUTH. DIAC. WEESHUIS*. In the exergue, *gesticht MDCLXXVIII. Jubile gevierd 24 Aug. 1778*.

A bronze medal commemorates an Industrial Exposition, held at Berlin, in 1844. Obverse, Germania seated upon a rock holding a wreath in right hand, a sword partially drawn from its scabbard reposing on her lap. Her left hand rests on the rock which bears the inscription, *Seid einig*. Exergue, *GERMANIA*. Inscription, *ERINNERUNG AN DIE AUSTELLUNG DEUTSCHER GEWERBSEERZEUGNISSE ZU BERLIN, 1844*. Reverse, a locomotive crossing a bridge. Around this is a wreath on which are five shields with emblems respectively representing navigation, manufactures, mining, philosophy and agriculture. Inscription, *VORWAERTS MIT DEUTSCHEN FLEISSE UND DEUTSCHER KRAFT*.

A bronze medal represents on the obverse a King standing by a throne, with his right hand extended in the act of swearing, between two female figures. The one on the left holds a tablet on which is inscribed *GROND*

WET; that on the right, a spear. Inscription, NEDERLAND 12 MEI 1849; exergue, *Je maintiendrai*.

Reverse, a female uncovering a male portrait before a throne, and a kneeling female inscribes upon tablet XXV JAAR. Inscription, NEDERLAND 12 MEI 1874; exergue, *Jubilæum*.

A fine bronze medal exhibits a beautiful laureated head of Napoleon within a wreath tied with ribbands on which are inscribed, *Wagram, Tirol, Pyramids, Marengo, Lunerville, Amiens, Codes, Legion d'honneur, Austerlitz, Jena, Tilsit, Simphon*.

Reverse, a view of the Island of St. Helena, with ships in the foreground, setting sun to right, eagle on branch in air. Inscription, IL MOURUT SUR UN ROCHER. Exergue, *Ile Ste Helene*. 5 Mai 1821.

A gilt medal bears on obverse, a male bust in costume of the fourteenth century and inscription, JOAN GALEATIUS VICE COM. A FUNDAMENTIS INCIPIT AN. MCCCXXXVI.

Reverse, the Cathedral at Milan with the inscription, LATUS, ECCL. METROP. MEDIOLANI.

A bronze medal bears on the obverse a Cathedral with date in exergue, 1342-1516. Inscription, DER VÄTER FROMMER SINN RIEFDICH INS LEBEN. Reverse, the rear of the same building in a ruined, incomplete condition; in exergue, *zerstört am 7 Mai 1842*. Inscription, VEREINTE KRAFT WIRD WÜRDIG DICH ERHEBEN.

A white metal medal, on obverse an unfinished Cathedral with date in exergue, 1242. Inscription, as follows:

DAS ALTE CÖLN HAT EINST GEGRÜNDET  
DIES WUNDERVOLLE GOTTESHAUS;

Reverse, the same finished with inscription,

DOCH DEUTSCHLAND HAT SICH JETZT VERBÜNDET  
UND BAUT MIT GOTTES HÜLF' ES AUS.

Exergue, the date 1842.

Mr. Isaac F. Wood, of New York city, has presented to the Numismatic and Antiquarian Society of Philadelphia, a number of medals in white metal and copper, issued by himself commemorative of various events, and which have been placed in the exhibition. One of Haverford College (Series B. No. 2), bears on the obverse a well executed head of William Penn, with an inscription, and on the reverse a view of the college building. Another bears on the obverse the head of Washington in a keystone with dates 1732-1799; on the reverse, the inscription, "Washington, fit keystone in the triumphal arch which spans the nation's century."

Another (Series C, No. 4), has on the obverse the head of Washington surrounded by the inscription, "The lover of peace he espoused the sword for the colonies' birthright. 1775-100 years-1875;" reverse, a representation of a house and trees with inscription, "The Washington Elm, Cambridge, Massachusetts; June 3d, 1875. Centennial Celebration."

Another bears the head of Washington with the inscription, "True, and



wise, and merciful and just. 1732-99 ;" on the reverse, a representation of Washington's tomb with the inscription, "Mount Vernon Chapter, No. 228, R. A. M. Mnt. Vernon, N. Y." Another struck to commemorate the dedication of St. Patrick's Cathedral, New York city, by Cardinal McCloskey, on the 25th day of May, 1879, bears on the obverse a representation of that building, and on the reverse an inscription setting forth the event for which it was issued.

Another bears on its obverse a representation of "Founder's Hall," Haverford College, and on the reverse a chapel, with the inscription, "Alumni Association of Haverford College, Pennsylvania."

A bronzed medal. Obverse, the head of Major André, with the inscription, MAJ. JOHN ANDRE, OCTOBER 1, 1780. Reverse, a church, with the inscription, OLD DUTCH CHURCH, TAPPAN, WHERE MAJ. ANDRE WAS TRIED.

A bronzed medal. Obverse, head of Washington, "HISTORICAL AND FORESTRY SOCIETY OF ROCKLAND COUNTY, ORGANIZED FEB. 22, 1878. Reverse, a farmhouse, "WASHINGTON'S HEADQUARTERS, 1780, TAPPAN. ERECTED 1700."

A bronzed medal. Obverse, bust of General Wayne, CENTENNIAL ANNIVERSARY OF THE BATTLE OF STONY POINT, JULY 16, 1879. Reverse, an army besieging a fortress across a river and on a bluff. STONY POINT EXPUGNATUM, XV JULY, MDCCCLXXIX.

Among the series of copper Dutch medalets, which are on exhibition in the first medal case, the following are of the most interest :

No. 34141, bears on its obverse upon a sea violently in commotion, lashed by storms, a ship whose topmasts have been broken off, above which is the date 1563. Inscription, INCERTUM . QUO . FATA . FERENT. On the reverse, a female figure holding her right hand towards heaven, and in her left an anchor ; from above rays are streaming down upon her head. Inscription, SPES . ALMA . SUPERSIT.

This jetton was struck in reference to the dissensions and lack of unity then prevalent in the Netherlands and the unfavorable outlook of the times.

No. 34179 has on the obverse the inscription, LAPIS . REIECTUS—CAPUT . ANGULI. Within a circle of very fine lines a three cornered stone, showing its broadest part downwards ; below is a crowned lion with a shield near the inscription on the border. Reverse, DNS. FECIT. IIOC. ET. FU. (it) MI. (rabile) IN OC. (ulis) H. (ominum.) 1574. The sacred name of Jehovah in Hebrew letters within a circle, beneath which are clouds, whence beams and rays are spreading downwards.

No. 34214. Obverse, AFFLICTOS . DOCET . VIAM . SUAM. 1577, and a five-leaved rose. In the lower foreground is the figure of a man resting upon the earth (the prophet Elijah), receiving in his right hand a piece of bread, which a hand is reaching to him from out of the clouds. In the background of the landscape appears a city. In the clouds the name of Jehovah in Hebrew letters. Reverse, LIBRAT . A . CONDEMNANTIBUS . ANIMAM . EJUS. Daniel in the lion's den by the side of two lions. Above

the name of Jehovah in a cloud (as on the obverse), and a hand stretched out. This piece refers to the gloomy state of affairs and is intended to recall to the mind of the distressed or doubting Hollanders the two signal examples of the Divine beneficence that are commemorated upon this coin.

No. 34379. Obverse, ZELUS . DOMINI . EXERCITUM . FECIT . HOC. Upon the upper portion of the field the name of Jehovah in Hebrew letters, surrounded by a cloud from which a naked arm holding a sceptre is projecting; below is a landscape in which several cities and towns are visible. Reverse, STENOVICO. | OTMARSIA. | COVORDIA. | CAPTIS. | HOSTE. | REPULSO. | SEN. | FÆD. PRO. | F. | F. | M'DXCII. This piece refers to the capture of the cities named.

No. 34404. Obverse, CASTRACON | SPEXIT INSE | ADVERSARIA | SELVOLDACUM | BISLECHIO AD | NOV. MDXCV. Reverse, a battlemented tower, at whose base a battering ram worked by eight warriors is being operated and has effected a breach. This and the next jetton commemorate the capture of the towns of Selvold and Bislich.

No. 34405. Obverse, QUERERE. Within a circle of vines Mars stands armed with lance and shield; by his side the trunk of a tree, upon which a bird is resting; in the foreground a mass of infantry. Reverse, ET. TUERI. MDXCV. A female figure seated facing front, with a large helmet upon her head, holding in her right hand a shield, upon which is displayed the Lion of Holland; in the left a lance; at her right side is seated an owl upon a branch. In the background is an encampment of tents. This relates to Prince Maurice's prudence in preserving his conquests and to his Mars-like valor in effecting them.

No. 34407. Obverse, FRUSTRA . OPPUGNAT . USQUEDUM . PROTEGIT . DEUS. Soldiers standing by a river bank with a crowned leader; the other side of the river is protected by a shield which a hand holds out from heaven. Under the shield are four soldiers ready for the fray, and behind them are seen kneeling three persons in prayer. Reverse, VIGILATE . ET . ORATE . DEO . CONFIDENTES . MDXCVI. A seated female figure with folded hands; upon her right a sentry is keeping watch; on her left a shield displaying a crowned lion, by the side of which is a tower, upon whose summit there is also a sentinel.

This jetton refers to the province of Zeeland being threatened by the Archduke Albert.

No. 34423. Obverse, ORDIN. | AUSPIC. PRIN. | MAURI. DUCTU. | HOSTE AD TUM | NOUTUM CÆSO. | DECEM OPIDIS. ET. | TRIBUS. ARCIBUS. | EXPUG. ET. TOTA. | CISRIHE. DITIO | NE. PACATA. | 1597. Reverse, SOLI. DEO. HONOR ET GLORIA. The Belgian lion rampant, holding a sword and bundle of arrows. This celebrates the victory at Turnhout and the recapture of nine towns.

No. 34457. Obverse, IMPERATOR. MARIS. TERRE DOMINUS. A full-rigged ship under sail. Reverse, LUCTOR ET EMERGO. 1602. A four-leaved rose between small crosses. This relates to commerce and navigation once more beginning to be lively.

No. 34461. Obverse, *ARS. GRAVE. TOLLIT. ONUS.* A man bending down over a lever is endeavoring by its means to raise a huge millstone. Reverse, *INDUSTRIA ET LABORE.* A spade transpiercing a crown. In the exergue *MDCII.*

This relates to the surrender of Grabe.

No. 34491. Obverse, *SERVAT. VIGILANTIA. CONCORS. MDCVI.* A ship in a storm-tossed ocean, whose waves are breaking its masts; clouds are in the heavens. Seven figures are to be seen upon the ship who are busied in taking necessary measures for the preservation of the ship and bringing it to its destination. Reverse, *MODICÆ. | FIDEL. QUID. | TIMETIS. | S. C.*

This refers to the general depression and consternation of the Netherlanders.

No. 34518. Obverse, *FORTITUDO. BELGICA.* A bundle of arrows with their points upwards. Reverse, *MDCXII. | INDUCIAR. | III. | S. C. |* This commemorates the fourth year of the truce.

## 2ND. COINS.

Among the coins a number of fine specimens have been added, of which the following are a few of the more important.

There is a very interesting silver coin of ancient Spain. It bears on the obverse a head with a stern forbidding countenance, and crisp curled hair and beard, calling to mind the conventional Assyrian type. There are also certain rude letters both on the obverse and on the reverse. It is the current opinion among Numismatists that these coins were copied after those issued by the early Greek monarchs with such changes as the lack of skill on the part of the artists would naturally cause. The reverse exhibits a horseman charging with a lance seated upon a steed whose forefeet are raised in motion from the ground. The action is spirited, and by no means so stiff as the low state of the arts would have warranted us in expecting. The head on the obverse does not, in my opinion, bear out its presumed Greek origin, and I incline to the belief that it is rather a representation of some one of their gods, possibly the Phœnician Hercules.

The first settlements in Spain were those of the Carthagenians, established ages before the earliest known periods of classical history.

There exist numerous varieties of these early Spanish coins with various inscriptions, which have only been deciphered in the last few generations, and even as yet their true signification is in doubt. The author of *La science des Medailles*, an early work on Numismatics, published at Paris in 1715, speaks of these coins as being truly *medallas desconocidas*, which no one had undertaken to collect or reduce into order, although "*Lastanosa ait crû rendre un grand service aux curieux, de se donner la peine d'en faire un Volume, qui fut imprimé à Huesca en 1645 ou il a fait graver environ deux cents de ces medailles qu'il avait dans son Cabinet, la plupart d'argent.*"

Lastanosa had an insight into the true status of these coins which had been considered as bearing Punic letters. He maintained that the characters on them were those of the early language of Spain, and that it was

to these coins Pliny referred when speaking of the booty carried away by the Romans from Spain, *argentum signatum oscense*.

The coin of which we are speaking has been ascribed by both Henin and Akerman to the city of Tarragon, the capital of the Province of the same name, much celebrated in ancient authors for its beauty and opulence. Pliny writes of it that it was *Scipiorum opus ut Carthago Pœnorum*. Augustus erected in honor of his visit, an altar, upon which subsequently a palm-tree grew. It issued coins while under the dominion of the Romans, and there are some extant bearing the heads of the Gothic rulers of Spain.

Carthage is probably one of the best known cities of antiquity, and abundant specimens of its coinage have descended to our own times. The pieces in the exhibition are small bronze coins bearing on the obverse the head of Demeter (or Persephone) adorned with necklace, earrings, &c., and on the reverse the figure of a horse and a palm tree.

The Carthaginians adopted from Sicily the worship of Demeter and Persephone, and the horse possibly refers to Libya, which was famous for its horses, or perhaps to the horse's head fabled to have been dug up at the foundation of the city. Carthage was ultimately destroyed by the Romans 146 B. C., and the coin was probably issued about the third century before the present era.

There is a very fine didrachm of VELIA in Lucania bearing on the obverse a beautifully executed head of Apollo, and on the reverse a lion in the act of leaping upon a stag, which it is rending to pieces. The muscles are admirably portrayed, and the action is depicted entirely without stiffness, but with the ease and grace which arises from the consciousness of power and strength.

Velia was a large and prosperous city founded by the Greeks, and its coinage exhibits the undoubted confirmation of history. Greek culture alone could have produced such fine specimens of Art. It is now known as *Castella mar della Brucca*, and lies between Policastro and the Gulf of Salerno. It was mentioned by both Strabo and Pliny, and was the seat of the Eleatic sect of Philosophers, who received their appellation from the city; their leaders were Zenophanes, Parmenides, Zeno and Melissus. The speculations of this school rose to a higher region of pure thought than those of the Ionic or Pythagoric schools, and among the Eleatics for the first time comes distinctly into play the dialectical movement in human thought.

Corinth, in Achaia, is represented by a fine didrachm, bearing on the obverse helmeted head of Venus; and on the reverse, Pegasus, with the letter  $\phi$  (Koph), the ancient or Phœnician form of K. "A city," says Strabo, "large, rich and prosperous; replete with men fit for the handling of every sort of affair, civil, artistic and political." Founded by Bellerophon, the type of the reverse refers to his subjugation of the steed Pegasus.

The coinage of this city exhibits a high degree of artistic culture, a thorough proof, were any wanting, of the truths which history records of

its refinement and luxury. From the earliest days of its coinage, when the reverse was simply the rude punch mark, to the last periods when its money was issued, the pieces struck and engraved for this city are worthy of a high rank and possess a great merit.

The very first coins issued by Corinth bear on the obverse Pegasus, with the archaic letter  $\phi$  (Koph), which disappeared from the later Greek alphabet. Reverse, the so called key pattern punch mark. The execution of the flying horse is very bold.

This city was colonized at a very early period by the Phœnicians, and was destroyed by the Romans under L. Memmius, B. C. 146. The present piece was issued about 480 B. C.

It is interesting to compare the coinage of this city with that of Sybaris, both of infamous renown for the pursuit of pleasure.

There are also specimens of what is known as the *incused coinage* of Magna Græcia. These pieces were issued by the Grecian colonies settled in lower Italy, and are probably the most remarkable specimens of the monetary art which have ever been produced. Instead of being thick and hemispherically raised towards the center, they are thin and flat, and bear on the reverse in intaglio the same subject which the obverse bears in alto-relievo. This coinage had been abandoned before the sixth century B. C., and all these coins are of very great antiquity, yet their workmanship is fine and artistic, even when the design is of the simplest. What the object for the adoption of so peculiar a form could have been, has been the subject of numerous conjectures, but as yet none seem satisfactorily to explain this abnormal condition of coinage.

The specimens which the Numismatic and Antiquarian Society have placed on exhibition are SYBARIS and METAPONTUM.

The coinage of Metapontum bears on the obverse an ear of corn, on the reverse the same incused. This city was founded about 700 B. C., by a colony from Northern Greece, and its prosperity became exceedingly great, owing to the fertility of its soil, which was especially rich in wheat. The Metapontines sent annually to the temple at Delphi a golden sheaf of wheat and considered Ceres as their tutelary goddess, impressing her emblem, the ear of corn, upon their coinage.

Sybaris presents, on the obverse, a bull standing and looking backwards, and the same type incused on the reverse, with the inscription  $\chi\mu$ , being written from right to left in the most ancient manner and with the *sigma* of an archaic type, resembling a *mu*. The history of Sybaris and its successor city, Thurium, is well told by Dr. Cardwell.

"The people of Sybaris, on the bay of Tarentum were conquered and their city destroyed by the Crotoniats about the year 500 B. C. Fifty eight years afterward the Sybarites endeavored to rebuild their city, but were again driven away six years later by their old enemy. The aid of Athens and the Peloponnese was invoked, which in 444 B. C. laid the foundations of Thurium, near the site of the ancient Sybaris, taking the name from a fountain in its neighborhood. Soon the foreign element prevailed over the

Sybarites and put them to the sword. \* \* \* What then is its numismatic history? We have several coins of Sybaris, bearing in the form of their brief inscriptions and workmanship the strongest evidence of high antiquity, so that we may fairly assign them to a period fully five centuries before the Christian era. The constant device on these coins was *Bos stans et respiciens*, showing that it was the acknowledged cognizance of Sybaris. The next coins belonging to the place are more recent, as we may judge from the form of their letters and their highly finished style of workmanship, and taken on the analogy of coins in general, they might be assigned to a period not much anterior to the time of Philip and Alexander. But we find from these that the devices of the place have undergone an important change. The ancient cognizance of Sybaris is now of secondary consequence and has given way on one face of the coin to the *Caput Palladis*, the well-known badge of Athens. The inscription, too, is, in one instance, the abbreviated word Sybaris, in another a similar abbreviation of the newly contracted name, Thurium. So then, these coins strictly mark the period when the natives and foreigners were living together in compact, mutually endeavoring to conciliate each other, each party preserving tokens of its hereditary attachments.

"The next set of coins is distinguished by a minuteness of ornament which marks them decidedly as the most recent of the three, and these coins, in perfect accordance with the historical narration, bear no memorials of the ancient Sybaris. The inscription in every instance is of Thurium, the *Caput Palladis* is prominent, and the ancient cognizance of the Bull is no longer *stans et respiciens* but *irruens et cornupeta*. Doubtless there was found in the meaning of the word *Θορπιος*, a reason for the difference they adopted 'a bull running and butting.'

"When, later in the history of the town, Athens and other powers of Greece began to claim it as a dependency, they boldly refused to acknowledge any other founder or patron than the deity of Delphi. And what say the coins? Some of them, which seem to have been minted when the republic was yet scarcely free from its ancient habits, retain the badge of Athens, but some also bear the emblems of Ceres, the tokens of agricultural prosperity, and others are impressed with the head and insignia of Apollo."

The device of the bull occurs upon the reverse of a denarius of Augustus (of which a specimen is in the present collection), and also those of the gens THORIA. "The '*Bos irruens*,' " says Smyth (Northumberland family coins, p. 238), "or a fierce bull charging, is no doubt a punning allusion to the moneyer's cognomen, *Θορπιος*, impetuous, and not an agrarian emblem. Some antiquaries, however, insist that it alludes to an agrarian law introduced by the tribune Sp. Thorius Balbus, which lex concerning the Roman public lands was engraved upon the back part of the same tablet which contained the Lex Servilia de Repetundis; this tablet was broken

\* Cardwell Lecture, III, p. 66 et seq. Diodorus Siculus, lxi., § 90, &c.; lxii., § 11 and 35.



at some unknown time, but seven of its fragments have been preserved and published by Fulvius Ursinus about A. D 1577."

"The symbol of the bull plays an important part in many mythoses. This animal was intended to represent power of body and unwearied masculine energy, two great attributes especially coveted by ancient kings and great men. The bull seemed to be, in a manner, sacred to Venus, whilst the lion was emblematic of the male creator. The bull and the lion, among the Assyrians, occupied much the same place as the lion and unicorn do in modern heraldry. Lajárd (*Culte de Venus*) has summed up the matter in the following words:

"Les deux principaux attributs caracteristiques de Vénus furent en orient comme en occident le taureau et le lion, l'un symbole du principe de la chaleur et du pouvoir generateur actif, l'autre, symbole du principe humide et du pouvoir generatif passif; et tous les deux signes du Zodiaque, mais avec cette difference que le taureau etait le premier signe de l'equinox vernal et la domicile de la lune á l'epoque de sa plus grande exaltation, et que le lion placé au solstice d'été etait le domicile du soleil pendant la canicule. Ces deux animaux furent donc aussi les hieroglyphes ideographique de l'hermaphroditisme de Venus, divinité á laquelle les anciennes traditions assignent, comme á Mithra, une place entre les equinoxes et les solstices et donnent pour monture le taureau." In another passage he writes thus: "Premier être sorti des mains d'un dieu créateur du monde, le taureau, symbole de vie, est appelée d'un nom qui signifie á la fois *vie* et *taureau*. Par une conséquence immédiate d'une doctrine qui enseignait que les premiers êtres vivants étaient né dans l'eau, il est, en même temps, le symbole de principe humide, du pouvoir passif de la génération ou du sexe feminine." (Inman's *Ancient Faiths*, Vol. 1, p. 376, et seq.)

The symbol of the bull also is frequently taken to represent water, or the watery principle in which life takes its beginning\* and hence, no doubt, the reverence paid to rivers, as instanced, even at the present day, in India, by the burial of the Hindoo dead in the holy waters of that region. It may therefore be considered as a representative of the *K'TEIS* or the great humid principle of nature.

Not a trace now remains of Sybaris, this great city which once ruled over twenty-five of its neighboring towns, and sent into the war that resulted in its downfall three hundred thousand fighting men. Nothing is known of its mansions and its palaces, not one stone is left to show the spot where "men slept upon beds of roses and these renowned banquets took place to which women were bidden a year in advance that they might have the whole interval for rendering their beauty more irresistible." Recent explorations have resulted in the finding of a sarcophagus full of carbonized matter, showing that the corpse had been cremated prior to interment.

Amidst the remains of the funeral pyre, near the head of the corpse, were some golden fragments, the ornamentation of a box, and afterwards the bronze nails with which it had been fastened were found. Near the breast

\*cf Inman, p. 377, note.

of the deceased were two small silver plates, of the size of large buttons, which bore in relief two beautiful female heads. Near the remains of the skull was discovered a small plate of thin gold folded together, on which were visible some traces of Greek writing, and which, on being opened, disclosed within its folds another similar tablet likewise bearing an inscription. The learned professor to whom this find was given to decipher, believes that the larger plate contains mystic matter written by one familiar with the Eleusinian mysteries; the small plate contains an inscription in capital letters in the Doric dialect, in which a hierophant addresses the dead, congratulating him that after having suffered the worst of evils he had from a miserable mortal become a god, having pursued the right path which leads to the fields reserved for the just in the bowers of Persephone.

There is a fine Tetradrachm of the famous city of Tyre (in Phœnicia), bearing on the obverse a laureated head of Heracles, on the reverse an eagle on rudder behind a palm branch, to left date *III* (year 18), inscription, *ΤΥΡΟΥ ΠΕΡΑΣ ΚΑΙ ΑΣΥΔΟΥ*.

Tyre was one of the grandest cities of all antiquity, and its commerce and riches are frequently spoken of in the classical writers. From Tyre, as from modern London, ships went to visit all parts of the globe to which they could reach; and to Tyre came merchandise from all parts of the continents of Europe and Asia. According to Herodotus it was founded about 2755 B. C., and received its independence about 126 B. C. This coin was therefore issued about 108 B. C. The execution of this coin is especially noteworthy. The massive boldness of the head of Melkarth (the Tyrian Hercules) exhibits a brutal and repelling countenance; the eagle (sacred to this god) on the reverse is in an attitude of life-likeness almost unsurpassable. The rudder exhibits the maritime character of the city and the palm was the emblem of Tyre and Sidon. Phœnicia is fabled to have taken its name from this tree, which in Greek was known as *φοινίξ*. The palm was likewise the well known emblem of victory. As found upon coins it is, according to Spanheim, of three varieties, viz:

- 1st. That which is tall, thick-branched and leaved, but bears no fruit.
- 2d. Smaller, less dense and bears fruit.
- 3d. The small sterile dwarf palm.

The palm tree of Judea, which bears fruit, is found upon the coinage of that country. As a branch the palm is found upon the coins of Arabia; as a tree, upon those of Tyre, Damascus, Alexandria and the Phœnician Colonies of Sicily, Africa and Spain.

The palm tree was one of the ornaments sculptured in Solomon's Temple, and among modern writers (*e. g.*, Inman's *Ancient Faiths*) has been considered to be a Phallic emblem equivalent to Asshur. "On a coin of Ephesus a palm tree is represented as springing up by the side of a stag cut asunder, meaning that the 'Great God (Kronos or Ilos) being cut off, the palm tree repairs all.'""\*

\* Inman, Vol. I, p. 193.

The epithets, *ΙΕΡΑΣ* (Holy) and *ΑΣΥΓΙΟΣ* (inviolable sanctuary) were adopted by many other cities. After a very long period of life, with checkered prosperity, Tyre was finally destroyed by the Saracens, A. D. 1291, after having withstood many sieges, including one by Alexander the Great.

In addition to these already described in my previous paper there are a number of so called family coins, among which are well preserved specimens of the Cornelia, Fulvia, Hostilia, Maiania, Opeimia, Pomponia, Scribonia, Vibia, and other gentes, presenting interesting types. The gens Cornelia was a most noble family, both Patrician and Plebeian, and has left a number of devices upon the denarii which are attributed to it. The gens Fulvia although "confessedly one of the most conspicuous of the Roman gentes, is only known by one denarius, except some colonial ones figured by Morell" (Smyth Family Coins, p. 85). It bears on the obverse the head of Pallas Nikephora with alated helmet and the word ROMA; on the reverse, "Victoria alata holds out a chaplet in a biga galoping to the right. Under the horse is CN FOUL, and in the exergum M GAL Q MET. Although we do not hear of the Fulvii till L. Fulvius became consul in B. C. 322, it is known that even then they were of long standing in Tusculum. \* \* Of the ladies of this gens two played a very conspicuous part; the first, a woman of rank, divulged the Catalinian conspiracy, the second married Mark Antony for her third husband, breathing nothing but war and domination. This is the fury who pierced the dead Cicero's tongue with a bodkin, uttering all sorts of opprobrious epithets all the while." (Smyth, *loc. cit.*)

A denarius of the gens MAIANIA presents on the obverse "a winged and galeated head of Roma with the mark X; on the reverse, a winged Victory in a rapid viga holding the reins firmly with her left hand, while her right is whipping the horses, which are unusually free from harness. Below is the inscription C MAIANIA; exergue ROMA. History makes no mention of this gens and its rank is unknown." (Smyth, p. 127.)

The gens OPEIMIA presents "the galeated head of Pallas, bearing stern and manly features, wearing an earring with a long pendant and a necklace; in front is the denarial stamp X, and at the back is a chaplet. On the reverse, L. OPEIMI; exergue Roma. Victoria alata in a galloping quadriga holds the reins with her left hand and a laurel crown in her right. This was probably struck by L. Opeimius, the aristocratic prætor who suppressed the revolt of Tregellæ, B. C. 125. This is the man who being consul four years later, hunted C. Gracchus, with personal animosity, to his destruction; and being himself condemned for receiving Jugurtha's bribes, died, hated and insulted, a poverty stricken exile at Dyrrachium. \* \* \* The Opeimii are first brought on the stage of history at the time of the Samnite wars, yet the components of the gens are but little known." (Smyth, 157.)

The denarii of the gens Pomponia occur frequently and are of many devices. Upon some are seen the figures of the Muses, Clio, Euterpe, Thalia, Melpomene, Terpsichore, Erato, Polyhymnia, Urania, and Calliope, with

the symbols respectively indicative of their supposed avocations. Upon one denarius is found the representation of Hercules Musagetæ playing upon a lyre. "The temple of Hercules Musarum was built in the Flaminian circus by the consul Fulvius, who having, when imperator in Greece, recognized Hercules as Musagetes, consecrated to his tutelar protection the nine statues of the Muses, which he had brought over from Aetolia, B. C. 189. The Pomponia, though a plebeian gens, were very proud, and, towards the end of the Republic, followed the example of the other Roman gentes by claiming high antiquity, pretending descent from Pompo, one of the sons of Numa." (Smyth, p. 184, et seq.)

The gens Vibia likewise affords many varieties of obverses and reverses. Among the former we find the laureated head of Apollo, the head of Pallas, an ivy crowned head of Bacchus, a scenic mask of Pan, a laureated female head supposed to represent the Goddess Libertas, laureated head of Hercules, bearded head of Jove; on the reverses are galeated figures in quadriga, Ceres crowned with wheat marching across a field, Jupiter Axuris, Roma seated on a pile of bucklers, holding in her right hand a spear, in her left the parazonium, pressing with her left foot on a globe, and in the act of being crowned by a flying Victory, two clasped right hands sustaining a winged caduceus (relating to D. Brutus, who being besieged by Mark Antony at Mutina, B. C. 45, was liberated by the consuls Hirtius and Pansa), a panther with his fore feet raised on a decorated cylindrical altar on which are the Bacchic attributes, a bearded mask and a long thyrsus adorned with ribbons, Victoria alata placing a garland upon a trophy composed of spoils, and Ceres, crowned with corn, holding a lighted torch, seated in a car drawn by two dragons." These dragons are portentous creations of the ancient imagination in all countries. The serpent worship was all but universal. It is alluded to in the earlier portions of the Bible, and it is known to have prevailed among the Chaldees, the Persians and the Egyptians as emblematic of the Sun and Time and Eternity. From the Orientals it descended to the Greeks, and from them to the Romans, among whom it became a type of Victory, Prosperity and Health." (Smyth, p. 255, et seq.) Ceres in her car, drawn by dragons, likewise occurs upon the coins of the gens Volteia.

There is a handsomely executed Paduan fabrication of a first brass of the Emperor Otho, bearing his head on the obverse, and on the reverse the Emperor standing with his right hand extended over an altar clasping the hands of three soldiers who bear military ensigns; inscription SECURITAS P. R. S. C. A Roman first brass of the Emperor Otho is something that has always been a desideratum; none are known to exist or to have ever existed. Bronzes from the Egyptian Mint are to be met with and these alone must replace the Roman issue in collections unless the unexpected, which is always occurring, should some day bring to light a hoard of these coins. The usual explanation given for the absence of the first bronzes of this Emperor is based upon the power retained by the Senate of striking copper, while their rulers had usurped the privilege of coining gold

and silver. The denarii of Otho are of not infrequent occurrence, notwithstanding the extremely short duration of his reign.

We cannot more appropriately conclude this sketch than with the words of the Spanish writer, Gussême :

*“No pretendo que la afición á las medallas sea la única; pero sí que no se olvide, que no se abandone, antes sí que se cultive. Ella es de tal calidad, que siempre recrea, que ofrece a cada paso nuevas satisfacciones, y con una solidez, que no se halla con tanta frecuencia en los demás estudios. \* \* \* La Erudición debe ser en todos tiempos, y en todas Naciones apetecida y solicitada; y seguramente no hay modo para adquirirla con mayor extensión que el uso de los medallas, el estudio para su perfecto conocimiento, y el manejo de los libros que tratan de ellas. Quien las cultiva va adquiriendo de grado en grado los mas útiles conocimientos, y una vasta extensión en el campo de las bellas letras.*

*“Cada medalla es un diploma o instrumento autentico; que comprueba la verdad de la Historia; y no habrá en el mundo archivo de mas seguros y antiguos documentos. \* \* \* El estudio de la antigüedad es cosa que no debemos jamas olvidar y abandonar segun Claudiano;*

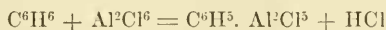
*Nec desinat unquam  
Tecum Graia loqui, tecum Romana vetustas.”*

*On the Formation of Dibenzyl by the Action of Ethylene Chloride on Benzol in the Presence of Aluminium Chloride. By William H. Greene.*

(Read at the Meeting of the American Philosophical Society, October 17, 1879.)

By a series of the most remarkable chemical investigations of late years, MM. Friedel and Crafts have shown that the radicles of the saturated hydrocarbons can be grafted upon the benzol nucleus by the action of aluminium chloride upon a mixture of benzol and the monatomic chlorides, bromides, etc. Thus, on passing methyl chloride into benzol in which aluminium chloride is suspended, all of the methyl derivatives of benzol, from toluol to hexamethyl benzol, may be formed, according to the proportions of benzol and methyl chloride which are brought into contact. In the same manner, the ethyl, propyl, and other derivatives of benzol may be obtained abundantly.

In these reactions, hydrochloric acid is disengaged, and the explanation proposed by Friedel and Crafts supposes the reaction to take place in two phases: In the first, a compound of benzol and aluminium chloride is formed, with elimination of hydrochloric acid.



In the second, the aluminium-benzol compound reacts upon the mona-